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Imagining the Scenario:
Emergency Training Simulations and Embodied Action

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Imagining the Scenario:
Emergency Training Simulations and Embodied Action

by

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Dedication

For Ty

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Abstract

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This thesis is a microanalytic investigation of embodied resources used to complete imaginary emergency scenarios in paramedic simulation training exercises. Emergency simulations present an intriguing site for investigating the process of imagination in that cognitive processes are displayed through human action. I examine training from both a multimodal perspective and also as an embodied cognitive process. I found that the students employ a number of communicative strategies to anchor themselves physically in the imagined space of the scenario. First, I examine how the fictional frame is embedded in the instructional frame, particularly focusing on how the lead student designs utterances in relation to the fictional component of the scenario. I argue that the routine activities serve as scaffolding and recognizable actions throughout the simulation grounding the students physically in the simulation. Secondly, I found that there is never a point in the laboratory exercises where the simulated action becomes automated; rather, the students must continually work at building action in the scenario. I also examine how sensory exploration, specifically looking and touching, allow students to rehearse future embodied action.

Lastly, I argue that the students are not only developing intellectual knowledge of treating and stabilizing a patient in the field, they are also training their bodies as the main source of action.

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INTRODUCTION

Chapter 1: Emergency Simulations and Embodied Resources

This thesis is a microanalytic investigation of embodied resources used to complete imaginary emergency scenarios in paramedic simulation training exercises. Similar to children's play, the students act out an imagined scenario where they must display both practical and decision-making skills. The laboratory simulations, as one part of a larger training program, are meant to prepare students to become active agents during real-life emergencies. However, in additional to the institutional goals of the paramedic's training, the simulations present a complex interaction that the students must learn to manage. Research evaluating learning outcomes and the actual simulation is sparse (Deppermann, 2014; Hutchins, 1997), and although the simulation exercises do not mimic the temporal demands of a real-life emergency, they are an integral part of the paramedic's professional development. Emergency simulations present an intriguing site for investigating the process of imagination in that cognitive processes are displayed through human action. These scenarios are meant to prepare students for real events in the field, but as will be shown they are also the site of complex interactions that require the students to not only learn practical skills for their profession but also ultimately learn to simulate.

Wittgenstein (1953) pointed out how language, on its own, does not carry meaning, but it is how human action is constructed through language and the meanings implied by interaction. For this process, Wittgenstein coined the term *language game* that describes the importance of how language is constructed not by a word's actual meaning but through the interaction the utterance is meant to elaborate or is embedded in. Wittgenstein's *language game* becomes more apparent when looking at multimodal communication. It could be argued that there is no such communication without taking into account the surrounding

environment, and as such, research has analyzed the coordination of talk, gesture, context, and semiotic resources used in social interaction could all be categorized as multimodal communication (Goodwin, 1994; Goodwin, 2003; Streeck, 2009; Hutchins, 1997; Kendon 1972; 1990). Kendon (1990) pointed out that "activity is always *located*"; however, in the emergency simulations, the task is to build action in a hypothetical context. Therefore, the students must use resources in the environment to complete the task of treating the patient. In other words, the simulation activity is largely located in conceptual space. Streeck, Goodwin, and LeBaron (2011) noted that by analyzing multimodal interaction, we can see "some of the practices used by human beings to build action in concert with each other" (p. 3). In this sense, the task of the interaction requires the paramedic students to become agents in treating a patient through learning to build action through incremental steps. While the institutional goal of the emergency simulations is to allow the students to practice decision-making skills in the simulation, it is also a moment where the students are developing their *professional vision* (Goodwin, 1994) Not only does this require them to use their understanding of professional artifacts (tools, vital statistics, etc.) but also to train their bodies to act and make decisions as a paramedic.

This thesis operates under the assumption that the development of professional skills is both an embodied and cognitive task that is developed through the practice of micro actions. Significant to the theoretical underpinnings of this view, is Goodwin's (1994) examination of social interaction from the perspective of how human action is built through talk, embodied resources (e.g. gestures, body posture, gaze, etc.), and specialized tools (e.g. maps, charts). Goodwin (1994) examined the "discursive practices" in which "members of a profession … shape events in the domain subject to their professional scrutiny" (p. 606). To illustrate the discursive practices, Goodwin (1994) used the example of an archaeologist

field site where a Munsell chart is used to perceive and catalog patches of dirt in a way that presents significant information for the trained professional. Goodwin argued that:

> Though apparently distant from the abstract world of archaeological theory and form the debates that are currently animating the discipline, this encounter between a coding scheme and the world is a key locus for scientific practice, the place where the multifaceted complexity of "nature" is transformed into the phenomenal categories that make up the work environment of a scientific discipline (Goodwin, 1994, p. 608).

Here Goodwin details how discursive practices used in the professional setting transform action through complex communicative actions that entail both historical documents (coding schemes), and the elevation of specific features of semiotic objects in order to gain a shared *professional vision*. However, Goodwin does not fully investigate how an individual embodies a profession. Paramedics are not only required to transform semiotic materials and specialized tools, but they must also learn to move and act as a paramedic. The simulations present an interaction where the embodiment of a profession becomes apparent; they are not only training to cognitively view the environment as a paramedic, but also, to *be* a paramedic, which centers on building action and developing agency.

This thesis examines training from both a multimodal perspective and also as an embodied cognitive process. Research focused on what gestures reveal about the cognitive process (McNeill, 1992; McNeill, 2008; Murphy, 2005, Yasui, 2013) has shown, contrary to a psychological approach, cognition to be coupled with both individual experience and external resources. Using both the methodological frameworks of microethnographic and conversation analytic approach, I examine the embodied resources used to create a shared imagined scenario which allows further action and contribute to the practice and development of professional skill. This study is guided by two central questions: What

embodied resources do the students employ in order to build action in the imagined scenario? What embodied practices allow the students to develop embodied agency that will later transfer to the field?

Other microanalytic studies looking at shared cognition and imagination have dealt primarily with the generation of ideas in group settings. Murphy (2005) and Yasui (2013) examined how gestures can confirm, suggest alternatives, and present new ideas in group brainstorming sessions. This study attempts to build upon this past research by examining instances where participants must manage multiple tasks, activities, and interaction frames. Additionally, studies looking at cognition as an interactional activity have focused primarily on gesture and have opted to not examine additional embodied resources (McNeill, 1992; McNeill, 2008; Murphy, 2005, Yasui, 2013). In contrast to these studies, the emergency simulations do not require the students to brainstorm ideas, but to jointly perceive an imagined emergency in order to build further action. This study takes a step further in interaction studies focused on shared cognition by examining imagination as an embodied experience that can assist with both individual and group cognition. This entails the coordination of internal processes and information received through sensory experience of activities and exploration. Analyzing videotaped recordings of nine emergency simulations, I examine how students use embodied resources as they attempt to perceive the imagined scenario, organize a shared perspective, and display professional skill. Specifically, I will analyze how routine activities and imagined activities provide scaffolding for the students, and finally, how sensory experience and exploration contribute to *perceiving* the imagined scenario.

Simulated training is widespread for medical professionals, research evaluating learning outcomes and the actual simulation is sparse. Past research examining simulation training exercises from a social interaction perspective have primarily focused on

participants who are already trained professionals. Hutchins and Palen (1997) used airline cockpit simulators to examine the multiple communicative resources used by pilots. Specifically, they examined how pilots couple talk, gesture, and the readily available gadgets in the cockpit to show the complexity of multimodal resources in connection to the pilot's profession. Deppermann (2014) analyzed group interaction during advanced training exercises with paramedics and found that "paramedic emergency action is shaped by situational contingencies, the particulars of the patient's condition, outcomes of interactions and medical treatment, and by emerging simultaneous and intersecting multiactivities by team members" (p. 249). Deppermann also outlined the multiple activities or tasks paramedics must congruently deal with while attending to a patient. Although Hutchins and Palen (1997) and Deppermann (2014) add to research on simulated training exercises, both studies examine participants that are already highly trained in their profession. The data collected for this project exhibits participants with various skill level in the field of paramedic science and therefore differs greatly from the datasets previously examined by both Hutchins and Palen (1997) and Deppermann (2014). The paramedic simulations collected for this study consist of interactions that are clunky and disjointed, where participants often oscillate between multiple interaction frames that include pausing to seek information from the instructor or figure out next steps.

The following chapters examine both what communicative resources the students use to build action in the scenario and also the use of sensory exploration in the student's developing professional skill. Chapter Two looks at how the fiction of the scenario is embedded in the instructional frame and how the students use routine activities to ground themselves physically in the imagined scenario. Chapter Three examines the role of acting out sensory explorations in assisting the students in building an embodied professional repertoire. Chapter Four summarizes the findings from the empirical chapters. The

remainder of this chapter discusses data collection, methodology and the overall organization of the laboratory simulations, including the participation framework.

Data Collection and Methodology

For this project, I collected approximately nine video-recorded emergency scenarios over the fall 2014 and spring 2015 semesters at a community college paramedic program. Out of the nine scenarios collected, I used extracts from five of the scenarios for my empirical analysis. The extracts analyzed in Chapter Two and Three are examples of phenomena that are representative of the entire sample.

Analysis of videotaped interaction requires the combined techniques of the conversation analysis approach (Jefferson, 1988; Sacks, Schegloff, and Jefferson, 1974; Schegloff, 2007), and interaction studies focusing on embodied action (Kendon, 1972; Kendon, 1990; Streeck, 2009; Streeck, Goodwin, and LeBaron, 2011). Both conversation analysis and research on embodied interaction use a *microanalytic* approach. This entails a turn-by-turn analysis of talk and of the accompanying embodied action by participants. Although it should be noted that the empirical findings rely heavily on the analysis of embodied action and do not follow a strict conversation analytic procedure. The techniques for analyzing turn-by-turn interaction proposed by the conversation analytic approach support the method of analyzing embodied action, which is the focus of the present analysis. Transcription of extracts of videotape requires intensive and repeated observation of the video data. The key moments patterns identified were then used to draw larger conclusions about the embodied cognitive processes of paramedic simulation training.

Organization of Paramedic Simulations

The paramedic-training program consists of classroom lectures and traditional exams, laboratory simulations, clinical training, and field internships. The laboratory simulations investigated in this study, are the site where students practice decision-making skills and supplements their clinical training and field internships where they interact with real patients and are monitored by professionals. Laboratory simulations allow students to practice their conceptual skills in calculating vital statistics and gathering contextual information about the patient, and to ensure treatment and safe transport to a hospital. It is viewed as a complement to their clinical training that allows them interaction with real patients but does not provide them with field experience where temporal demands are present. Laboratory simulations differ in terms of the activity being practiced and also the simulator used by the students. According to Al-Elq (2010):

> Simulation has been defined as a situation in which a particular set of conditions is created artificially in order to study or experience something that is possible in real life; or a generic term that refers to the artificial representation of a real world process to achieve educational goals via experimental learning (Al-Elq, 2010, p. 36).

There are many different types of simulation-based technologies including both virtual and plastic models. The simulators are "classified according to their resemblance to reality" and range from high-, medium-, to low-fidelity (p. 37). The paramedic-training program researched for this study uses both low-fidelity and medium-fidelity simulators that range from mannequins who report physiological feedback to suture arms:

Figure 1.1

Figure 1.2

Figure 1.1 is an example of a medium-fidelity simulator where the students practice continued treatment during transportation to a hospital. During these practices, the simulator will report physiological information such as the patient's breath, and pulse. Figure 1.2 depicts suture arm simulators the students use to practice the technique of administering IVs. The emergency scenarios examined in this study are classified as low-fidelity. Low-fidelity simulators are "often state and lack realism or situational context" and are designated for scenarios where the students have received dispatch information and have arrived on the scene (p. 37). Specifically, the simulators used in the investigated scenarios, are whole body mannequins that do not facilitate physiological feedback to the students as they administer treatments. Instead, the students and instructor must create the physiological feedback of the simulated patient to imagine the emergency and complete the scenario. While each simulator provides the paramedic students with professional practice, each represents only one segment of the entire practice of stabilizing and transporting a patient. Al-Eq (2010) points out that "the major challenge to medical simulation is the fact that evidence to date is weak in methodology" and he adds, "the assumption that such learning is directly transferable to the clinical context is often untested" (p. 39). Contrary to Deppermann (2014), low-fidelity simulators are not comparable to real life emergencies, but they do allow the students to gain experience with tools, procedures, and the sequence

of events for initially stabilizing a patient. Hall et al. (2005) conducted a small study and found that "paramedic students trained on a simulator had equivalent success and complication rates when compared with students trained in the OR" although their study looked specifically at administering an endotracheal intubation (ETI) (p. 853). An ETI is a tube that is inserted through the mouth and into the patient's trachea in preparation for immediate transfer to surgery for patients in critical condition. While investigating successful learning outcomes is out of the scope of this study, it does aim to add to research concerning cognition and learning.

Participation Framework in Emergency Simulations

The students in our scenarios use a low-fidelity simulator that creates a dynamic participation framework where the instructor and student team lead play multiple participant roles. This requires a shifting or dynamic participation framework. Goffman (1981) defines *participation framework* in this way:

> When a word is spoken, all those who happen to be in a perceptual range of the event will have some sort of participation status relative to it. The codification of these various positions and the normative specification of appropriate conduct within each provide an essential background for interaction analysis (Goffman, 1981, p. 3).

Although the emergency simulations involve group coordination, the participation framework is structured as primarily dyadic interaction between the instructor and student lead. The additional students act as assistants to the student lead and complete routine activities and minimal actions of information seeking. Below is an example of how the interaction space is organized by the students and instructor:

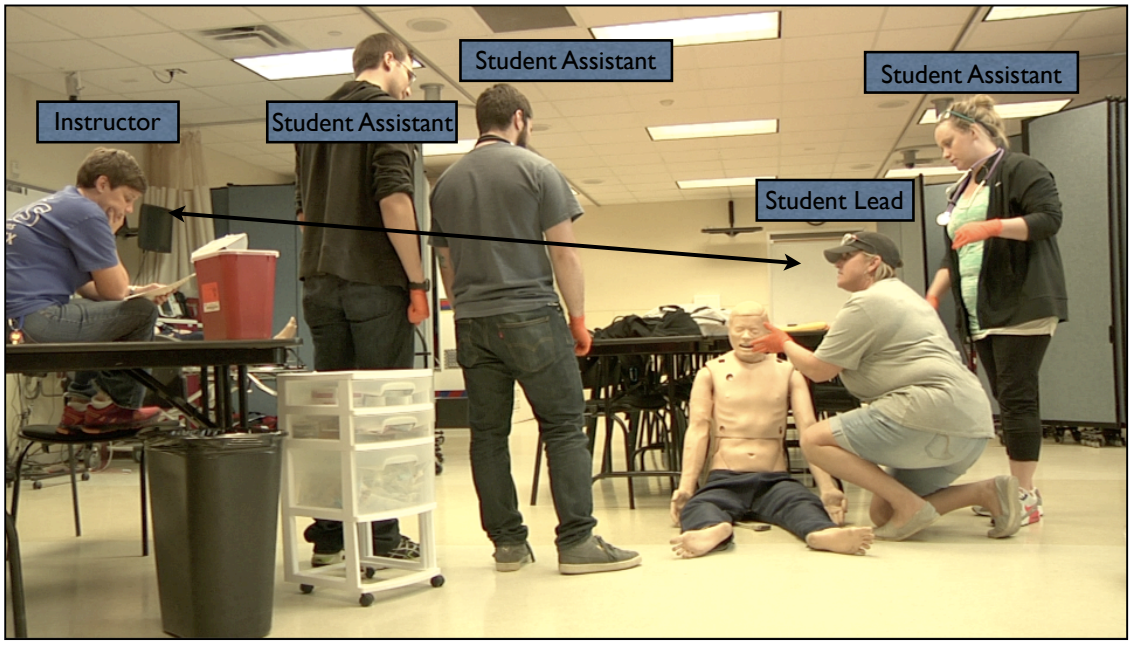


Figure 1.3

During the simulation, the students form an interaction space around the mannequin separate from the instructor (Figure 1.3). The practice of emergency scenarios is comprised of four parts: the dispatch report, the general impression, the simulation, and the debriefing. The instructor sits outside of this space but is still near enough to observe the students and participate in face-to-face interaction with the student lead. In Figure 1.3, the student lead's gaze is focused on the instructor and the instructor's gaze is focused on the scenario document. Typically, the instructor will oscillate between mutual gaze with the student lead, checking information on the document, and observing student action. Although the student

assistants will engage the instructor in face-to-face interaction at times, their immediate focus is on the patient.

The Setting/Interaction Space

The students complete simulated exercises in a classroom that are *translated* into an imagined space, this is possible because the instructor reports information about the the scenario during the general impression. To begin the scenario, students will designate a moment where they transition into the imagined space.

Student Lead Role

The student lead is primarily responsible for setting up and maintaining the imagined scenario. The lead asks the instructor questions, delegates tasks to student assistants, and organizes future action. Their role is both performative and information-seeking and requires transitions between displaying knowledge and acting out the imagined scene. The ultimate goal for the student lead is to demonstrate skill in both decision-making and the performance of routine activities.

Instructor Role

The instructor uses a document that serves as an outline and checklist for the students. This document includes dispatch information, various checkpoints for the students, and vital statistics of the patient. If the patient is responsive in the scenario, then the instructor will voice the patient's complaints and report necessary information to the students. If the patient is unresponsive, then the instructor will only the report necessary information to the students as they seek information from the instructor. The instructor does not interject unless asked questions or observes the students making substantial missteps that could hinder the trajectory of the scenario.

Student Assistants

The students assisting in the scenario are peripheral participants. They perform routine activities either voluntary or designated by the student lead, and occasionally, assist with seeking information and the negotiation of actions and imagined sequences.

Overview

In Chapter, 2, I discuss how the students manage multiple interaction frames and also how routine activities provide scaffolding or a material anchor for the students as they organize and build action in the imagined scenario. In addition to routine activities, I analyze moments where the students seek information about the injuries sustained by the patient and additional anchoring practices. Chapter 3 examines how the students perform sensory explorations that both assist with the maintaining a conceptual model of the patient's injuries, but also allow them to practice embodied agency. The simulation requires the students to use imagined senses to examine and explore the imagined injury (or injuries), which is integral in their training as paramedics. In Chapter 4, I conclude with a summary of findings from my empirical analysis.

CHAPTER 2: ROUTINE ACTIVITIES AND INJURY AS MATERIAL ANCHOR

Since the paramedic students are still developing their professional skill, the simulations require significant work on the part of the students to complete the emergency scenario. To put this another way, the students must continually resituate themselves in the imagined space to build action. The display of professional skill depends not only on their training but their ability to simulate an imagined scenario. In these scenarios, imagination is heavily dependent on the embodiment of practice and experience. As will be shown, significant to simulation are the embodied activities the students perform to assist with building a shared perspective of the imagined scenario to build further action. I suggest that paramedic simulations, as a specialized form of interaction, provide an opportunity to examine how an individual's conceptual world is coupled with the material world through embodied action. Furthermore, this chapter investigates the role of routine activities (e.g. embodied practice of professional skill) versus sequences where the students work to build an imagined injury.

Goffman's conception of framing (i.e. the particular way participants organize interaction) reveals the multiple interaction frames employed by both the student and instructor. Some of the fundamental concepts of Goffman's framing theory are the *participation framework* (see Chapter 1) and the *production format*. The production format consists of the speaker who is also (in the case of emergency simulations) the *principal*, *animator*, and *author* of the utterance. Goffman emphasizes the need to analyze how an utterance is managed and packaged by the speaker. Whereas the principal is "the party who

is held responsible for having wilfully taken up the position to which the meaning of the utterance attests," the animator is the "sounding box" or the means through which the utterance is produced, and the author creates the utterance (Goffman, 1974, p. 517).

To complete the scenario, the student lead must transition between the interaction frames of negotiation, information-seeking, and fiction. Goffman defines "fresh talk" as "parenthetical elaboration, questions and answers, and so forth" (p. 229). According to Goffman, "fresh talk *commonly* presents congruence among animator, author, and principal" and is "the style or register of spoken discourse itself" (p. 189). Goffman argued that interaction frames reveal the performance of the speaker. I will suggest that although there are multiple frames, there is still a dichotomy between what is fiction (i.e. imagined) and what is real (e.g. instructional). The "real" consists of sequences of instruction, negotiation, play, and information-seeking. For purposes of clarification, the play and fictional frames should be differentiated between moments where the students attempt to create a fictionalized narrative, and play frames where the students and instructor use humor to deal with the absurdity presented by the treatment of a mannequin. It should be noted that the fictitious frame is never fully developed; instead, it is embedded in the instructional frame. Understanding the multiple frames and shifts in footing provides a useful strategy for analyzing simulations because it reveals how the students employ framing strategies that create the imagined space and build action through the blending of talk, conceptual mental models, embodied resources, and material tools.

To examine the multiple interaction frames created during the emergency simulation, I will use empirical examples taken from the beginning of the simulation. As

noted in the introduction, the emergency scenarios consist of four parts: the dispatch report, the general impression, the simulation, and finally, the debriefing. Jean and the student assistants have just been briefed by the instructor that that have been called to the scene of a gunshot victim who is located on the second floor of a house. Jean, the lead, approaches the patient to begin the simulation:

Extract 2.1:

		Jean approaches patient _____|_____ | |
1	Jean	S:o I'm going to come up and-
		Jean taps patient on shoulder _____|____ | |
2		>sir< >s•ir<
3		are you o:k?
4	Instr	He says. they shot me?
		Joint attention on patient __|__ | |
5	Jean	>Ok well my name is Jean and I'm paramedic and I'm here to help you•<
6		and at this time-
7		u:m so he's talking to me so I know that his airway is patent

Figure 2.1.1

Figure 2.1.2

Jean approaches the patient and says, “So I’m going to come up and” (line 1). Jean transitions into the fictitious frame by tapping the patient on the shoulder (Figure 2.1.1) while uttering the dialogue “sir sir” and “are you ok” (line 2 and 3). In line 4, the instructor begins her utterance with “He says” to signal a transition into the fictitious frame and then she completes the utterance in a higher pitch with “they shot me” to respond to Jean’s dialogue. In line 5, Jean continues with additional dialogue, “Ok well my name is Jean and I’m paramedic and I’m here to help you”. In line 6 and 7, Jean responds, “and at this time” and “um so he’s talking to me so I know that his airway is patent”. Jean’s utterance in line 6 allows her to transition out of a fiction frame although she begins her utterance in line 7 with “um” which suggests that Jean is having trouble moving the scenario forward; however, Jean decides to display her interpretation of the dialogue sequence with “so I know that his airway is patent”. After Jean’s interpretation of the airway, the instructor does not take up the next turn, which indicates that Jean’s interpretation is accepted.

As the student lead, Jean is required to perform the action of principal, animator and speaker. In other words, Jean is responsible for creating both the fictional and instructional

frame and is the principal speaker in creating these transitions. Jean narrates her action of approaching the patient (line 1) and then switches into a fictitious frame (line 2 and 3). However, it should be noted that both the instructor and Jean begin their dialogue with an utterance (e.g. “He says”, “Ok well”) meant to clarify the transition to the fictitious frame. These transition utterances suggest that the fictitious frame is embedded in the instructional frame. As a result, there is never a moment where the students and instructor operate outside of the instructional frame, but continually add clarification to the fictitious frame they attempt to enact. Figure 2.1.2 shows the student assistants forming an interaction space around Jean and the mannequin although they are only observing and have not entered the simulation frame. Jean pauses the simulation (line 7) to report back to the instructor her current observation of the patient’s airway. Jeans uses the information gathered from the fictitious dialogue between her and the instructor to display skill and negotiate the current status of the patient’s airway. Since the instructor does not offer an alternative observation, Jean presumes this observation correct and continues the simulation.

In the next example, the students have been dispatched to a lake where a patient has been pulled out of the water and onto a slippery dock. When the students approach the scene, they see one bystander doing chest compressions and the patient is pale and has one “cut up” arm. The instructor informs the students that the patient was swimming and then struck multiple times by a boat before being brought to the dock. Billie, the lead, begins the simulation similar to the gunshot scenario by checking whether or not the patient is responsive:

Extract 2.2:

1	Billie	We are going to u:h approach the patient then
2		and I'm going to start off-
3		someone's supposed to doing cpr but-
		Billie kneels down and touches the patient's neck
		___|___
		| |
4		si•r sir
		Billie holds position
		_____|_____
		| |
5	Instr	He doesn't respond
6	Billie	He doesn't respond so <u>Steve</u>
7	Jim	Yes mam
8	Billie	Take over compressions.
9	Jim	K
		Billie touches the patient on the wrist and neck
		_____|_____
		| |
10	Billie	Um do I feel a p•ulse
		Billie returns gaze to instructor while holding pose
		_____|_____
		| |
11	Instr	You do feel a pulse
		Billie waves her hand back and forth at Jim and smiles
		_____|____
		| |
12	Billie	Don't- don't do compressions

Figure 2.1.3

Figure 2.1.4

Billie transitions from the general impression to the simulation with a series of cut-off utterances, "We are going to uh approach the patient then" and "and I'm going to start off", "someone's supposed to doing cpr but" (line 1, 2, and 3). Billie's utterances quickly narrate the current action of the fictitious frame which embeds the imagined action in the instructional frame. In line 3, Billie references the action of the imagined bystanders performing chest compressions. Billie does not design this utterance for a recipient but truncates the imagined action so that it does not require the full attention of the student assistants and instructor. Instead, Billie seems to be "marking" (Kirsh, 2011) the imagined action for her purposes of attending to the patient in the imagined scenario. In the field, the management of bystanders is an important task that involves collecting information about the patient's condition; however, in the simulation, Billie treats this as a peripheral detail to the narrative of the scenario. In line 4, Billie begins a dialogue with the patient with "sir sir". In response, the instructor says "He doesn't respond" (line 5). Billie interprets the patient as unresponsive and not breathing and delegates Steve to start compressions (line 6). In line 10, Billie asks "Um do I feel a pulse" and the instructor responds with "You do feel a pulse" (line 11). The instructor's response prompts Billie to realize that the patient is

breathing without assistance and does not need chest compressions. The students then have a moment of laughter to deal with the interaction trouble and the difficulty they are having beginning the scenario. Steve reenacts the mistake of performing chest compressions on the patient and then Billie continues the simulation:

Extract 2.3:

14 Billie >Ok<

Billie touches the patient's neck
_____|_____
| |

15 s•ir sir he doesn't respond

Billie touches the patient's wrist
_____|_____
| |

16 I feel a p•ulse and I have a pulse

Figure 2.1.5

Figure 2.1.6

Billie transitions with "Ok" and reiterates the information already gathered in the previous sequence. In line 15, Billie says "sir sir he doesn't respond" while also holding onto the patient's neck (Figure 2.1.5), similarly to how she began the simulation in the previous

sequence. She then touches the patient's wrist and says, "I feel a pulse and I have a pulse" (line 16). Billie not only verbalizes the reenactment of the previous sequence, but recreates the action with her body. Billie's utterances are in the instructional frame as she notes for the student assistants and instructor the current status of the patient; however, she reenacts the fictional frame of checking the patient's response and pulse through her body. The physical action of checking the pulse is also considered to be a routine activity. Routine activities are completed in a systematic way and are rarely altered from student to student. If the students and instructor are primarily functioning in an instructional frame (e.g. real), how do routine activities assist the students in creating the fiction of the imagined scenario?

To create a stable perspective for the imagined scenario, the students use embodied resources both to perform routine activities and to build a conceptual image of the patient's injury. And although both activities comprise the fiction of the simulation, they provide different sources for the paramedic students for stabilizing the conceptual scenario in the simulation. Murphy (2005) and Yasui (2013) examined how gestures are employed by participants to build action through gesticulation of an imagined artifact that can confirm, suggest alternatives, and present new ideas during group collaboration. In the following section, I will argue that the students alternate the bodily performance of both routine and imagined activities to anchor themselves *physically* in the fiction of the entirely conceptual imagined scenario.

Components of Fictionalization

Both Fauconneir (1997) and Fauconnier and Turner (2002) examined how complex mental models are used even for the simplest of cognitive tasks. According to Fauconnier and Turner (2002):

> Framing, analogy, metaphor, grammar, and commonsense reasoning all play a role in this unconscious production of apparently simple recognitions, and they cut across divisions of discipline age, social level, and degree of expertise. Conceptual integration, which we also call *conceptual blending,* is another basic mental operation, highly imaginative but crucial to even the simplest kinds of thought (Fauconnier and Turner, 2002, p.18).

Fauconnier and Turner's theory attempts to examine how mental models are integrated in the mind. Fauconnier (1997) describes the integration of multiple mental models as "operat[ing] in two input mental spaces to yield a third space, the blend," the authors add, that the "partial structure from the input spaces is projected into the blended space, which has emergent structure of its own" (Fauconnier, 1997, p. 150). This process is completed in "three interrelated ways":

> Composition: Taken together, the projections from the inputs make new relations available that did not exist in the separate inputs. Completion: Knowledge of background frames, cognitive and cultural models, allows the composite structure projected into the blend from the inputs to be viewed as part of a larger self-contained structure in the blend. The pattern in the blend triggered by the inherited structures is 'completed' into the larger, emergent structure. Elaboration: The structure in the blend can then be elaborated. This is called 'running the blend.' It

> consists of cognitive work performed within the blend, according to its own emergent logic (Fauconnier, 1997, p. 151).

While Fauconnier (1997) and Fauconnier and Turner's (2002) theory focused on examining how conceptual blends differ from other cognitive devices such as metaphor, Hutchins (2005) uses this theory to examine how material structures stabilize conceptual blends. Hutchins critiqued the theory of conceptual blends: "In most treatments of conceptual integration, all input spaces are strictly mental constructs" and adds that "the key thing here is the way in which two or more spaces are blended together" (Hutchins, 2005, p. 1559). Similarly, Becvar, Hollan, and Hutchins (2005) analyzed how hand gestures are used to discuss molecular models and aid collaborative communication in a scientific community. Becvar et al. noted that "one of the basic issues in developing an artifact is the choice of mapping between the *representing* world and the *represented* world (or between the surface representation and the task domain being supported by the artifact)" (p. 107). Becvar et al. argued that "gestures serve as cognitive artifacts when they are used to represent concepts, and support thinking, communication, and collaboration" (p. 107). As will be examined, the students employ multiple embodied resources to build the conceptual model of the emergency simulation, which requires the blending of verbal instructions and embodied action.

Routine Activities

Regardless of the scenario, there are multiple checkpoints that the students must complete during the simulation. These checkpoints include professional practices that are routine for the paramedics and can include checking or clearing the airway, checking the pulse, and completing a head-to-toe examination. Each routine activity serves as a point where additional action can be organized depending on the results or what the students

discover through completing these activities. These moments are also an opportunity for the students to display and develop practical skill while also allowing them to embody their role, as a future paramedic, in the imagined scenario. Jay, the lead, is performing the routine activity of checking the lung sounds of an unresponsive patient who has been in a motorcycle accident:

Extract 2.4:

Jean bends over patient while Jay holds stethoscope on patient's upper right chest

1	Jay	So I'm listening to l•ung sounds on the right side

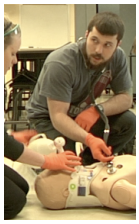


Figure 2.2.1

Jay holds position — Jay moves stethoscope to lower abdomen

2	Instr	U:m lung sounds (singing voice) are eq•ual bilateral

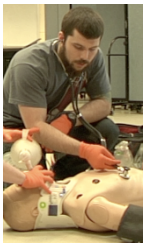
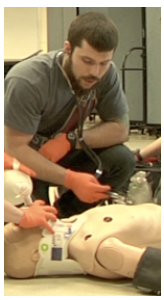


Figure 2.2.2

Jay uses the stethoscope to point towards multiple locations on the patient's chest

3	Jay	Eq•ual bi•lateral
4	Instr	Uh hum



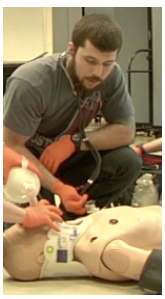


Figure 2.2.3 Figure 2.2.4

Jay points to patient's back with stethoscope and holds position
_____|_____
| |

5 Jay Front and back

6 Instr U:m yep

Jay begins the activity of checking the patient's lung sounds with "So I'm listening to lung sounds on the ride side" (line 1). Jay is kneeling down by the patient and uses his stethoscope to indicate which lung he is listening to. The instructor verbalizes what Jay would hear ("equal bilateral"), and Jay moves the stethoscope to the lower abdomen, and then, in line 3, Jay uses the stethoscope to point to multiple locations on the patient's chest and repeats the instructor's response with "Equal bilateral". The instructor confirms this information (line 4) and Jay asks for a clarification: "Front and back" (line 5). Again Jay uses the stethoscope to index multiple locations on the patient's front and back. The instructor confirms that the lungs are bilateral with "Um yep" (line 6).

Jay completes the routine activity by an embodied performance of listening to the lungs sounds on the patient's right side (Figure 2.2.1 and Figure 2.2.2), and then by using the stethoscope to point to the patient's lungs on the left side (Figure 2.2.3 and Figure 2.2.4). This entails blending an embodied performance of this activity with the gestural practice of pointing. In the first half of this activity Jay embodies the routine activity of checking the patient's lung sounds through acting out the action as he would in a real-life emergency. In the second half, Jay indicates the additional locations where he would check lung sounds by using the stethoscope to indicate the remaining lung quadrants.

During the lake scenario, Billie has discovered blood in the patient's mouth, which suggests that the airway is blocked. Anna, a student assistant, is delegated with the task of suctioning out the airway:

Extract 2.5:

01	Billie	As soon we get the airway suctioned, I then want to drop an OPA if he can tolerate it
02	Anna	K it's on

Figure 2.2.5

03		turn•ed on
04		It doesn't actually turn on
05	Instr	You suction out wa•tery blood
06		(0.2)

Figure 2.2.6

07	Instr	Water water bl•ood blood
08	Billie	Alright

Figure 2.2.7

Anna begins the routine activity by announcing that the suction unit is on, but adds that it "doesn't actually turn on" (line 2 through 3). Anna verbalizes her action, shows the instructor the tube (Figure 2.2.5), and then places the tube in the patient's mouth. The instructor responds with a visual description of Anna's action in line 5 ("You suction out watery blood"). As Anna continues to suction out the patient's mouth the instructor responds with a visual description with "Water water blood blood" (line 7). This activity then allows the students to move forward ("dropping an OPA") to assist the patient with breathing:

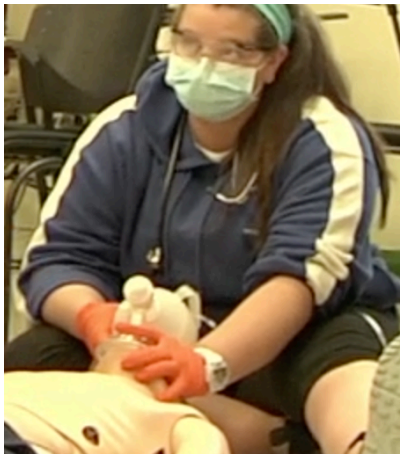


Figure 2.2.8

The action of suctioning in Extract 2.5 requires Anna to blend the fictionalized performance of suctioning the patient's airway (Figure 2.2.6 and Figure 2.2.7) with verbalizing the inconsistencies found in the instructional frame ("it doesn't actually turn on"). Anna signals the beginning of the suctioning by displaying the object (the suction unit tube) and then placing it in the mannequin's mouth. She then enacts the action of suctioning with a circular motion (Figure 2.2.6 and Figure 2.2.7). The suction unit coupled with the

circular motion not only blend the real frame with the imagined, but this action also serves as a recognizable "artifact" for both the instructor and paramedic students. Similar to Becvar et al.'s examination of how hand gestures become "cognitive artifacts" routine activities such as clearing the patient's airway serve as an *embodied* artifact that is known to the group and is completed through a systematic performance that is only slightly altered by individual style.

These embodied artifacts can be performed throughout the scenario as a device for the students to physically anchor themselves in the simulated emergency, and provide what Hutchins referred to as a *material anchor* that allows the students to embody the paramedic role. The embodiment of routine activities provides the students with a stable juncture, or scaffold that can be arranged and rearranged at different moments in the simulation. Goodwin (2013) outlined two processes participants use to organize action by arranging and rearranging semiotic resources (i.e. lexicon and prosody) – *substrate* and *lamination*. Goodwin, focusing on utterances, he argued that semiotic resources become building blocks that can be manipulated, elaborated, and reconfigured for future communication: "Building subsequent utterances through decomposition, reuse and transformation of language structure provided by another is a central locus for grammar as a form of public, social practice" (p. 2). Goodwin pointed out that "a substrate is not simply an encompassing context, but instead an immediately present semiotic landscape with quite diverse resources that has been given its current shape through the transformative sequences of action that culminate … in the current action" (p. 4). Similarly, Goodwin notes that "the laminated structure of action, the way in which it is composed of layers of different kinds of semiotic

materials, is something that participants in interaction can dissemble and reorganize in order to build subsequent action" (p. 12). Here, the semiotic material is comprised of the suction unit, Anna's display of the tube, verbalization and performance of the circular action, and also the instructor's description of the action once the suctioning begins. The combination of these semiotic resources ground the group in the imagined activity and also serve as a resource for discovering and implementing further action in the scenario.

Conceptual Blends and the Imagined Injury

While routine activities provide the students with embodied actions that are stable and easily recognizable, moments where the students must examine the patient's injuries require an assessment of what is unfamiliar or unknown. The imagined injuries require the students to improvise the moment while also building a conceptual image of the patient's injuries through seeking information from the instructor and performing routine activities of examination. Many of the scenarios portray a complex emergency where the patient has suffered multiple injuries that require extensive sequences of exploration. These scenarios require the students to use embodied resources to develop a conceptual image of the injury.

While Anna's suctioning presents an action from which further action can be built, it was also required the pre-activity of checking the patient's airway. Before Anna's suctioning can be completed, Billie evaluates the patient's airway to discover that the airway was blocked:

Extract 2.7:

Billie is kneeling next to patient and looking into the patient's mouth

		_____|_____
1	Billie	Um I'm going to check his airway u•:m
		Raises hand in preparation of hand gesture in line 4
		_____|_____
2	Instr	There's some u:m (.) missing teeth?

Figure 2.3.1

3	Billie	Ok
		Billie waves hand back and forth with a closed fist drawing a trajectory from her eyesight to the patient's mouth
		_____|_____
4		do I see the teeth
5	Instr	>Nope<
6	Billie	[Blood (inaudible)]
7	Instr	[And lots of water] and blood in his mouth gur-
8		and there's uh respiration about two a minute
9		its gurgly
10	Billie	Ok

Billie kneels down next to the patient, looks into the mouth, says, "Um I'm going to check his airway um" (line 1), and waits for the instructor's response. The instructor responds with "There's some um missing teeth", verbalizing what Billie would see (line 2). Billie asks for further clarification of the visualization with "do I see the teeth" (line 4). She completes this utterance by moving a closed fist back and forth drawing a trajectory between

her line of vision and the patient's mouth. The instructor then says that there are no teeth visible but "lots of water and blood in his mouth", "and there's uh respiration about two a minute", "its gurgly" (line 7, 8, and 9). Although much of the work for building a conceptual image of the injury is verbalized, Billie sustains visual focus on the patient's mouth and uses a closed fist to draw a line between her and the patient's mouth. This suggests that the verbalization of imagery is not enough for Billie to build a conceptual image of the injury; instead, she uses her gaze and the motion of her hand to anchor her perception in the imagery scene ("lots of water and blood") described by the instructor. This extract also presents a moment where the routine activity of checking the patient's airway has led to the discovery that the patient has additional internal injuries – a blocked airway. After Anna suctions the patient's airway (Extract 2.5), Billie begins to assess additional injuries sustained by the boating accident.

Extract 2.8:

1	Billie	Do I see any obvious spurting blood
2		I should have asked that
3	Instr	You see- um- bright red it's <not spurting anymore.>
		Billie places hand on patient's right forearm
		_____|_____
		| |
4		it's bubbl•ing out
		Billie taps patient's forearm
		____|___
		| |
5	Billie	Right he•re
6	Instr	Uh hmm

Holds hand on patient's forearm
_____|_____
| |

7	Billie	Alright Steve will you take care of this wound right here
8	Steve	Yep
9	Billie	Bubbling wound
10	Steve	Yep

Figure 2.3.12

Figure 2.3.13

Billie asks "Do I see any obvious spurting blood" and also notes that she should have established this kind of injury earlier in the simulation with "I should have asked that" (line 2). The instructor responds by saying "You see- um- bright red it's not spurting anymore." and "it's bubbling out" (line 3 and 4). Billie places her hand on the patient's forearm and then, after the instructor's description of the injury, she says, "Right here" and taps the patient's forearm (line 4). The instructor confirms the location of the injury (line 6) and then Billie asks Steve to apply pressure to the wound with "Alright Steve will you take

care of this wound right here" (line 7). Billie holds her hand on the patient's forearm, indicating the location for Steve, before proceeding with the simulation.

Billie stands up and takes stock of what has just happened in the scenario and asks the bystanders for additional information about the accident. The instructor reports that the patient was hit by the boat and then brought to the dock. Since, Billie now knows the patient was hit multiple times, she exposes the patient (removes clothing) and asks the instructor for information about what injuries are visible. The instructor tells Billie and the students that the patient has a hematoma on the forehead and an abrasion on the chest. The students work on treating the patient's arm and Billie delegates Ben to continue to question the bystanders for additional information. During this sequence, Billie is standing over the patient and then kneels down to recheck the injuries to the head and chest:

Extract 2.9

Adjusts sitting and directs attention to patient's chest and head

01 Billie So h:e ha::s

Billie touches the patient's chest — Billie taps patient's head/gestures with open palm pointed towards patient's head

02 >wh•at'd you say to his chest and his head?<

Billie holds open palm gesture/right hand — Billie taps patient's chest with left hand/holds with fingertips

03 Instr An abrasion on his- or like a big redness ecc•hymosis on his chest

04 nd uh uh a hematoma on his forehead

05 Billie When you ran him over with the boat was it the front of the boat the prop

06 Instr Yep

07 well he went under and through the prop

08 Billie Under and through excellent.

09 ok

Indicates multiple locations on the patient's lower body
_____|_____
| |

10 but I don't see any•thin::g• anywh•ere else

Billie grabs patient's arm
_____|_____
| |

11 Instr Just that arm is what looks like the prop c•aught

12 Billie Alright [(inaudible)

Steve grabs the patient's right arm
_____|_____
| |

13 Steve [This is the only ac•tive bleed.

14 Instr Uh huh

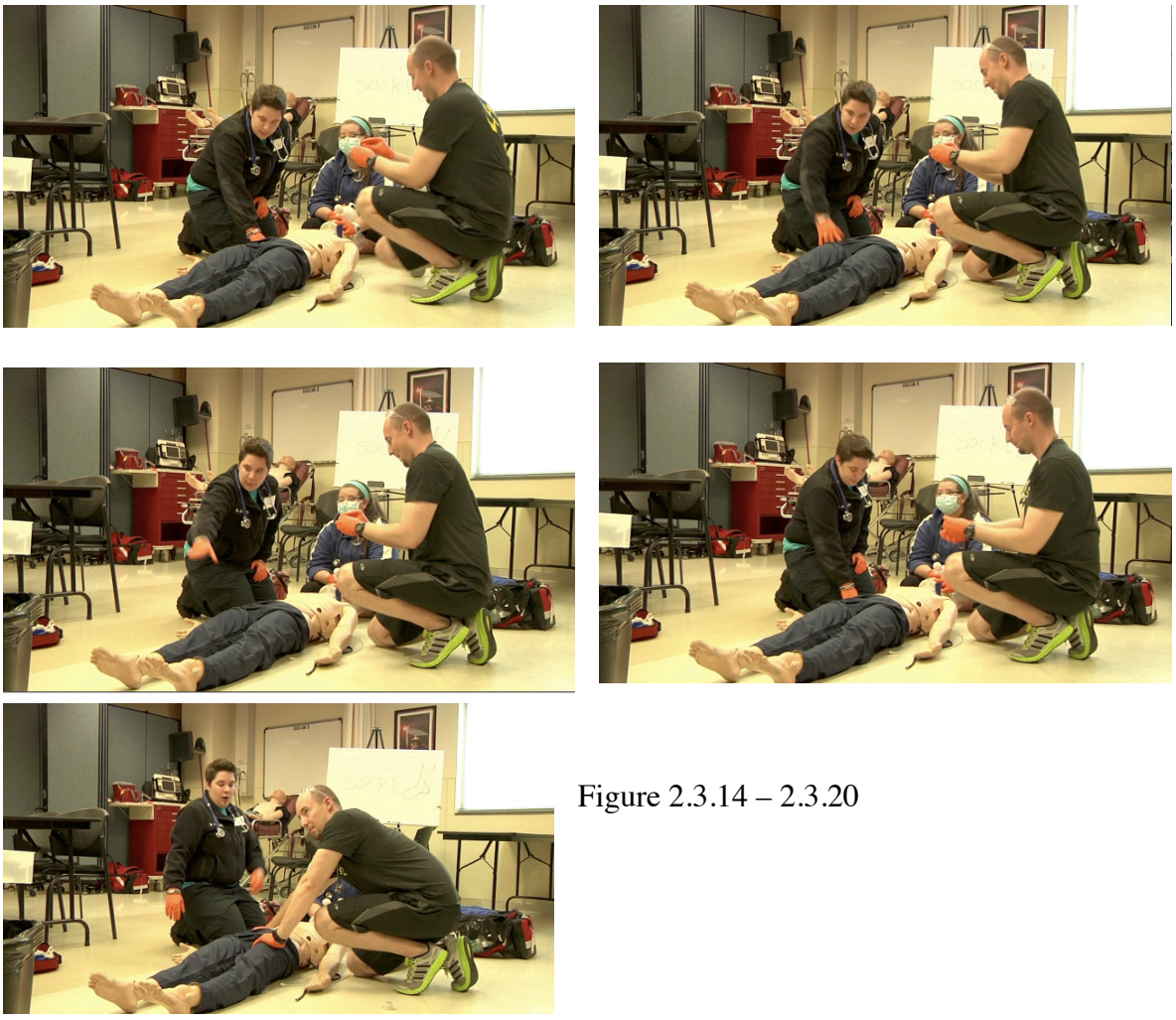


Figure 2.3.14 – 2.3.20

Billie knees down next to the patient and marks the beginning of a new sequence with “So he has” (line 1). She then touches the patient’s chest, taps his head, gestures with an open pal toward his head, and she says, “What’d you say to his chest and his head” (line 2). The instructor responds with “An abrasion on his or like a big redness ecchymosis on his chest nd uh uh a hematoma on his forehead” (line 3). Billie attempts to clarify what information the bystanders reported about the details of the accident (line 5 through 8).

Billie then transitions back into the scenario with “ok” and “but I don’t see anything anywhere else”. During her utterance in line 10, Billie indicates multiple locations on the patient’s body (Figure 2.3.16 – Figure 2.3.18)

As shown in the previous examples, Billie’s examination of the drowning victim’s injuries happens over multiple lines of talk. Billie begins by assessing the patient’s mouth (Extract 2.7), and then assessing further injuries to the patient’s body. In contrast to Extract 2.8, Billie does not seem to be actively perceiving the injury, rather, she uses hand gestures to index multiple locations on the body. Hutchins (2005) suggested that material anchors stabilize the conceptual. However, in Billie’s example, the injuries are never entirely materialized. Instead, activities where Billie seeks information about the patient’s injury are blended with a fictional and instructional frame, and Billie’s body serves as the material anchor.

Anchoring Practices

Billie’s action of indicating multiple locations on the patient’s body (Extract 2.9) could be categorized as anchoring practice employed to build the imagined injury. It allows the instructor and also the student assistants to participate in the imagined injuries Billie is attempting to examine. In the gunshot victim scenario, the instructor uses her own body to indicate the location of the gunshot hole for Jean, the student lead. While Jean and the instructor work to create a shared perspective of the location of the gunshot wound, Sara, the student assistant, is walking around the room gathering equipment and does not see the location indicated by the instructor. As will be shown, the work done between Jean and

the instructor indicates a concrete location for the gunshot wound, one that Sara misses, and then has to be corrected by Jean:

Extract 2.6:

14 Jean Where did they shoot him at?

15 are there- is there a •

Figure 2.3.1

The instructor points toward chest and looks down and then gazes at Jean

16 Instr You se:e a hole in his shirt that's like• right he•re.

Instructor holds pointing gesture and leans forward

17 Jon Is this [actually here [by the way

Jean gazes at wound location on patient Returns gaze to instructor

18 Jean [Ok [so=

19 Instr That's a wall.

20 Jon Oh

Instructor returns to pointing gesture and holds

21 Jean: Im•mediately? Im- the first thing that I'm going to do is-

22 is it like a button up shirt. e:r

Figure 2.3.2

Figure 2.3.3

Figure 2.3.4

Jean asks for the location of the gunshot wound (line 14 and 15) and says, "are there- is there a" (line 15). Jean gestures with a waving motion in place of finishing the utterance in line 15. This waving gesture requests more information about the location of the injury. In line 16, the instructor says "You see a hole in his shirt that's like right here." As the instructor says this she indicates the spot where the hole would be located on the patient using her own body as the location. This point marks the exact spot of where the wound should be imagined. This pointing can be seen as a "gesture of orientation," which Streek (2009) describes as "gestures that aid the parties in working out a shared perspective upon

the situation, a shared focus of attention or aspect under which objects are to be attended or featured" (p. 60). She first looks down (Fig. 2.3.2) and returns mutual gaze with Jean and leans forward, thus highlighting the location of the hole (Fig. 2.3.3). After this utterance, Jean briefly returns gaze to the spot on the patient and responds with "Ok" which serves as a transition point where Jean confirms that the injury has been properly located. This sequence of events marks what Streeck calls "projective indexing" which he defines as "marks made on one object [that] are meant to be projected onto another, virtual one: the gesture selects parts of the present environment, marks them up, and the resulting figure is articulated with phenomena in the story space" (p. 142). In the scenario, we see the instructor indexing the location of the wound on her chest, which is then projected onto the chest of the patient. Jean then returns gaze to instructor and then glances at the same location on the patient's chest and then returns her gaze to the instructor. The instructor holds the pointing gesture for two seconds before she is briefly interrupted by Jon, who inquires about the physical space of the imagined scenario (line 17-20). After the brief interruption from Jon, the instructor reestablishes mutual gaze with Jean and points to the same location that was indicated in line 21. The instructor holds this gesture until the end of line 22.

Jean reports that the t-shirt has now been removed and asks for a description of the hole. The instructor describes the visual image that Jean sees bubbles coming out of the hole. And then the following interaction happens:

Extract 2.7:

Figure 2.3.5

Sara raises hand to instructor
_____|_____
| |

41 Jean: Ok I'm listening•

42 Instr: The sound

Sara reaches towards the patient's chest/Instructor looks away
_____|_____
| |

43 Sara: >I'm going to cover right now<

Sara places hand on patient's chest and holds pose/Instructor returns Sara's mutual gaze
_____|_____
| |

44 >I'm cov•ering< >the wound<

Instructor assesses Sara's hand position
_____|_____
| |

45 Instr: K. i•t's a little higher hhh

Sara adjusts hand position/Instructor holds gaze on Sara's hand position
_|__
| |

46 (.)•

Mutual gaze between instructor and Sara
_____|_____
| |

47 ((laughing))

48 Instr: hhh £I'm hhh jus•t telling£[you hhh

Instructor points to location on chest and laughs/Sara gazes at patient's chest
_____|_____
| |

49 Instr it's up he•re ((laughing))

50 Jay [Wh- What's th-

Jean pats patient's chest
_____|_____
| |

51 Jean It's up here

Jean places Sara's hand in correct location
_____|_____
| |

52 Jean: it's up he•re

53 Sara: Ok°

Figure 2.3.6

Figure 2.3.7

Figure 2.3.8

Figure 2.3.9

Figure 2.3.10

Figure 2.3.11

In line 35, Jean notifies the instructor that the imagined shirt is now off and asks "do I see anything other than a hole" (line 36). First the instructor answers this question with "Nope" (line 37), and then she adds the visual description, "you see a little bit of bubbles coming out of the hole." (line 38). Jean checks the patient's lung sounds and says "Ok I'm listening" (line 41). At the same time, Sara raises her hand in order to request the instructor's gaze. However, the instructor does not see this gesture and is distracted by someone waving hello from the hallway (outside the camera frame). After gesturing towards the instructor, Sara moves to cover the wound with her hand and briefly checks to see if the instructor is watching. Sara says "I'm going to cover right now" (line 43) as she reaches toward the patient to place her hand on the wound. However, Sara does not accurately locate the area that was previously indexed by the instructor. The instructor and Sara retain mutual gaze as Sara moves to cover the wound.

Sara says "I'm covering the wound" and holds her gaze toward the instructor (line 44), making sure that the instructor sees that she is covering the wound (Fig. 2.3.6). What follows is a series of checks that are done through gaze. The instructor first gazes at Sara and then at the patient's chest and says, "K it's a little higher" (Figure 2.3.7). There is a

micro-pause when Sara looks again at the patient's chest and then moves her hand up (Figure 2.3.8). She returns gaze to the instructor and the instructor keeps her gaze focused on the chest, while Sara moves her hand up and returns her mutual gaze. Sara then gazes back at the instructor for confirmation that this is the correct location. The instructor responds to this request for confirmation with an aspirated laugh and then says "hhh I'm hhh just telling you hhh" (line 48, Figure 2.3.9) and then says "It's up here" (line 49, Figure 2.3.10) and points to the location on her chest indexing its exact position for Sara; however, Sara's gaze is not focused on the instructor so she does not see the instructor pointing. Jean repairs this action in line 51 and 52 (Figure 2.3.11) by patting the patient's chest and then moving Sara's hand to the correct location. Hutchins (2005) also discussed, briefly, the cognitive process of the *imagined material anchor*. According to Hutchins, "a final turn on this path is that when a material structure becomes very familiar, it may be possible to imagine the material structure when it is not present in the environment" (p. 1575). This example is represented in Jean's repair of Sara's hand placement. The previous sequence in Extract 2.6, between Jean and the instructor, indicated a specific location for the gunshot; therefore, Jean's perception of the injury has been made concrete or rather a material structure for Jean.

Summary

The observation in this chapter suggest that there is no point in the simulation where action becomes automatic. Instead the students must continually manage and recreate the imagined space in order to build action and successfully display professional skill. However,

the creation of the imagined scenario does not rely on the students to act in a fictional frame. In fact, the fictional frame is embedded in the instructional frame. Specifically, routine activities are performed in the fictitious frame while students simultaneously verbalize additional action – procedures, questions, observations – in the instructional frame. This blending allows students to arrange and rearrange complex activities of building an imagined injury with the recognizable action of the routine activities. The routine and imagined activities are performed as an embodied action where the students can physically anchor themselves in the imagined space and assist with building further action in the imagined scenario.

CHAPTER 3: PERCEIVING AND SENSING THE IMAGINED SCENARIO

This chapter builds on the perceptual tasks discussed in the previous chapter by examining how the students use sensory exploration to aid their individual perception. Within the simulations, the students perform complex sensory explorations that further develop their skills as paramedics. In fact, the fine-tuning of senses is an integral part of their training. The paramedics must train their bodies to both explore and accurately perceive the injured patient. In other words, low-fidelity simulations provide a site where students can practice *being* paramedics through imagined sensory tasks. This chapter further explores imagination not only as a something performed through bodily action, but also as a sensory activity.

Sensory Exploration and Embodied Agents

In the field, sensory exploration will provide the students with real physiological feedback, in contrast, sensory exploration in the simulation provides students a medium not for sensory exploration and discovery, but for preparing their bodies for activities in the real world. Important to this analysis is the work of J. J. Gibson who looked at how the senses are used not only to sense things, but also as active exploration and appropriation of the world. Gibson understood senses as "systems" for perceiving and experiencing the world. Contrary to his predecessors (Heidegger, 1962; Merleau-Ponty, 1962) Husserl's (2012) concept of *the living body* set up a dichotomous relationship with the mind and the external world. Merleau-Ponty (1962) argued for a more unified version of the body, "my body is constantly perceived," however, "it remains marginal to all my perceptions" (p. 90). Carmen (1999) notes that Merleau-Ponty saw the body as "neither an internal subject nor a fully external object of experience," Carmen adds that Merleau-Ponty argues that "we understand

ourselves not as *having* but as *being* bodies" (Carmen, 1999, p. 208). Therefore, Merleau-Ponty stated "the body is the vehicle of being in the world" (p. 82) Furthermore, "I am conscious of my body *via* the world," and "I am conscious of the world through the medium of my body" (Merleau-Ponty, 1962, p. 82). For the paramedic students, the sensory systems are integral in their training because it requires them to train their body to become agents in real life emergencies. Although Sheets-Johnstone (1999) critiques the concept of *the lived body* and replaced this term with "animate form," she stresses the importance of performing movement as an integral part of the kinesthetic experience:

> We come to know the world through movement … precisely in the way we intuitively knew as infants on the basis of our tactile-kinesthetic experiences, and knew without the aid of scare quotes, of qualitative happenings and vitality affects. Such knowing is a manner – or perhaps better, a *style* – of cognition that may be difficult for some adults to acknowledge since it is nonlinguistic and nonpropositional and, just a significantly, has no solid object on which it fastens (Sheets-Johnstone, 1999, p. 270).

As will be examined through empirical analysis, the paramedic sensory exploration allows the paramedic students to make the bodily experience of treating a patient (e.g. being a paramedic) concrete, thus, allowing them to become embodied agents. Through sensory exploration of looking and feeling, the paramedic students train their bodies to operate as the primary apparatus for examining the patient's body and injuries.

Seeing the Injury

The type of visual exploration or gaze that is explored in this section does not look at gaze as an interactional resource for intersubjectivity (Kendon, 1967; Goodwin, 1980). Instead, the extracts show the students actively looking at and exploring a location on the patient

while the instructor verbalizes what they would see. The current scholarship on gaze has been critiqued for the inadequate description of gaze that lacks a full account of this social phenomena (Streeck, forthcoming). Coutler and Parsons (1990) point out that:

> There are many diverse *verbs of visual orientation* (of which can combine with diverse complementizers, marking diverse perceptual modalities in the domain of vision: attending, beholding, browsing, catching sight of, checking out, discerning discriminating, distinguishing, espying, examining, experiencing, eyeing, gazing …, glancing …, glimpsing, having in sight, holding in view, inspecting, leering (at), looking …, making out, noticing (that), observing (that, through), ogling, peeking, peeping, perceiving, perusing, picking up, poring over, recognizing (as, that, how), scanning scrutinizing, searching … seeing … seeking … one's eyes on, sighting, skimming, spotting, spying …, squinting, staring …, studying, surveying, taking in, taking notice, of, viewing, watching …, witnessing, and others (Coutler and Parsons, 1990, p. 261).

Coutler and Parsons (1990) point out that these verbs not only describe disparate actions but also diverse "visual applications," and that "there are significant *distinctions* between these verbs which are easily overlooked when we speak generically of 'visual perception'" (p. 261). In real life emergencies, paramedics use visual exploration to assess any injuries (swelling, bruising, abrasions, etc.), and during the simulations, the students can be observed *visualizing* the injury through exploratory *seeing*. In fact, the students exhibit an active looking that is integral to creating and maintaining conceptual model of the imagined injury.

Jean, the lead, has just approached the gunshot victim, and enters an information-seeking frame to locate the gunshot hole on the patient:

Extract 3.1

14 Jean Where did they shoot him at?

15 are there- is there a

The instructor points toward chest and looks down and then gazes at Jean

16 Instr You se:e a hole in his shirt that's like right here.

Instructor holds pointing gesture and leans forward

17 Jon Is this [actually here [by the way

Jean gazes at wound location on patient — Returns gaze to instructor

18 Jean [O•k [so=

Figure 3.1.1

After the instructor indexes the gunshot by pointing to her chest and then leaning forward exaggerating the gesture, Jean turns her gaze to the patient's chest. She holds her gaze for a second (shown in Figure 3.1) and says "Ok" (line 18) before returning her gaze to the instructor. In line with Coutler and Parsons (1990), Jean is not gazing but actively looking at the location indicated by the instructor. It should be noted that to display professional skill for the instructor, Jean is not required to look at the indexed location of the injury; rather this example depicts a natural impulse to examine the location through the

distal sense of looking. While in this scenario the students are only required to treat one specific location, generally, the scenarios require students to examine extensive injuries on the patient.

The students are engaged in treating a car-wreck patient. To examine multiple injuries to a patient's leg, Jay, the student lead, uses his gaze to assess the injuries indicated by the instructor. Jay first exposes the patient to assess whether there are more injuries to the patient's extremities that are not visible with clothes on:

Extract 3.2:

1	Jay	So I'll expose him real quick
2		see if there's any other major bleeds
		Jay looks at patient's legs __|_ | |
3		(0.3)•
		Jay returns gaze to instructor Jay looks at the legs and then the right ankle _____|_____ _____|_____ | | | |
4	Instr	Open fracture to the right ankle• with minimal blee:ding•
5	Jay	K

Figure 3.1.2

Figure 3.1.3

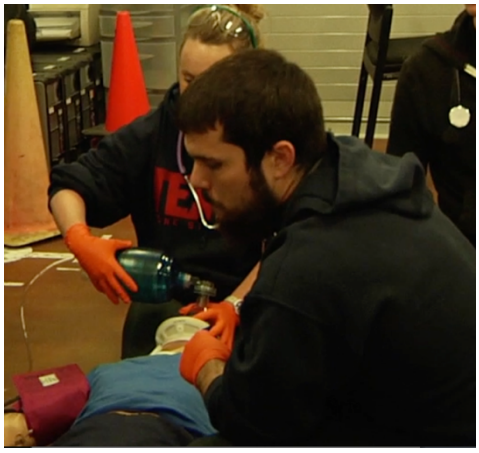


Figure 3.1.4

Jay first verbalizes the action of exposing the patient with “So I’ll expose him real quick see if there’s any other major bleeds” (line 1 and 2). There is then a three-second pause as Jay looks at the patient’s legs and waits for the instructor’s response (Figure 3.1.2). The instructor says, “Open fracture to the right ankle with minimal bleeding” (line 4). During this utterance, Jay first gazes at the instructor and then looks at the patient’s legs; however, Jay’s looking displays a more nuanced version of the example from Extract 3.1. Instead of examining one specific location as Jean did, Jay first focuses his gaze on the

location while he waits for the instructor's response. While the instructor describes the location ("right ankle") and the intensity of the injury ("minimal bleeding"), Jay scans the patient's legs (Figure 3.1.3 and 3.1.4) before resting his vision on the right ankle.

Although the scanning in this example is subtle, it reveals a moment where Jay is exercising his agency as a future paramedic; he embodies the abilities that will later transfer to the field. In the field, there would be no instructor to verbalize the "open fracture"; instead, Jay would be required to act as the sole agent in the discovery of the injury. Jay's action mimics a visual exploration that would be required for this discovery, and although this seems to be a natural progression in the simulated exercises, it is worth mentioning due to its importance to Jay's future as a paramedic. While he must develop practical skills with tools and decision-making, he must also develop sensory skills, like scanning, that will allow him to assess a patient's injuries.

In another scenario where Jay is the student lead, the students have arrived on the scene of a patient involved in a motorcycle accident. The students assisting Jay have already begun stabilizing the patient's neck, and Jay begins the general impression while standing over the patient:

Extract 3.4:

		Briefly gazes at instructor and then points to patient's mouth ___|___
1	Jay	And then-
		Holds pointing gesture and looks into the patient's mouth _____|_____
2		so I'm going to look• in the mouth
3		is there any blood or anything

4 Instr Yep? there's blood

Figure 3.1.5

Jay briefly gazes at the instructor and then points to the patient's mouth (Figure 3.1.5) and says, "And then so I'm going to look in the mouth" (line 1 and 2). Jay holds the pointing gesture before returning his gaze to the instructor and asking, "is there any blood or anything" (line 3). The instructor responds with, "Yep there's blood" (line 4). Since the instructor has verbalized that there is blood in the mouth, Jay must now clear the patient's airway. General impression is usually done while standing over the patient and using visual exploration. What follows as an extended activity of treating and status checking of the patient's airway through exploratory looking:

Extract 3.5:

5 Jay K so with our imaginary suction unit

Kneels down and creates depicting gesture of suction unit/gazes into patient's mouth
__|___
| |

6 Hhh (aspirated laugh)

Continues suctioning gesture/gaze focused on patient's mouth

_____|_____

| |

7 going to suction•

8 Instr Ok you suction out some blood cl•ots

9 Jay Ok

Holds patient's mouth open and gazes at the open mouth

___|_____

| |

10 Is it cl•ear?

Jay holds patient's mouth open

_____|_____

| |

11 Instr It's clear now

Figure 3.1.6

Figure 3.1.7

Figure 3.1.8

Jay looks around the room for the nearest suction unit, but does not locate one; thus, he depicts the motion of the suction with his hand. Jay gives off an aspirated laugh (line 6), kneels down, performs a hand gesture that depicts a circular motion, replicating the function of the suction unit, while also holding the patient's mouth open and looking into it (Figure 3.1.6). As he completes the circular motion with a closed fist, he says, "going to suction" (line 7). He waits for the instructor's response and in line 8, she says, "Ok you suction out some blood clots". Jay discontinues the circular hand motion. Jay says "Ok" (line 9) and then opens the patient's mouth again and says "Is it clear?" (line 10) and pauses for the instructor's response. Throughout this sequence, Jay looks into the patient's mouth until the instructor's response: "It's clear now" (line 11).

Jay uses visual exploration first to complete the general impression of the patient's airway, then reassess the airway once he has completed the routine activity of suctioning. Throughout the activity, Jay's gaze is focused on the patient's mouth as he receives verbal descriptions from the instructor of what he would be "seeing." This requires Jay to look into the patient's mouth while also verbalizing the action of suctioning the airway. Here the

routine activity of suctioning an airway coupled with sustained visual focus on the patient's mouth, is required to complete the action of clearing the patient's airway. Streeck (forthcoming) uses the example of a car-repair shop owner to describe how agency is both a linguistic and an embodied practice. Streeck (forthcoming) describes the embodied practices (e.g. pointing) that he uses to organize action and delegate tasks to his employees. Streeck notes that this man's "agency extends beyond the current moment because he can order others to do things, and their actions will then be attributable both to them and to him" (p. 453). Furthermore, Streeck notes that Hussein's embodied agency or "self-making" is an "ongoing enacting, reproducing, and modifying of a 'repertoire' of habits, of skilled dispositions to respond to evolving situations" (p. 453). Streeck uses examples of a professional who has fully embodied his profession; here, simulations are the site where the students are building a "repertoire of habits" that will later allow them to become embodied agents in the field. Furthermore, Jays extended visual exploration of the patient's mouth allows him to embody senses that will later become integral to him successfully treating a patient through the creation of habits, and this extended activity of clearing the airway also includes the touch:

Figure 3.1.9

Gibson (1966) points out that while "we can explore things with the eyes" we cannot "alter the environment;" but in contrast, touch, "we can both explore and alter the environment with the hands" (p. 99). Jay uses both looking and touching to examine the patient's mouth. Jay not only uses looking to examine the patient's airway, but also touch to hold the patient's mouth.

Feeling the Injury

Gibson (1962) coined the term "active touch" to describe how touch is not only used to handle things, but is also "exploratory" in nature. The students' senses are of particular importance to developing their skills for identifying the full extent of the patient's injuries. Central to the students "imagining" an injury is the development of skilled senses that play an important role in determining the patient's stability, injuries, and any other additional feedback. In the examples below, we see examples of active touching; however, it differs in what Gibson (1966; 1962) and Streeck (2009) strive to explain, because there is no actual feedback that the students receive from the patient; in contrast, the feedback is of an active conceptual sensory experience integral to imagining and building action in the simulation.

Returning to the car wreck patient from Extract 3.2, Jay is assessing the multiple injuries of a patient. He examines the abdomen:

Extract 3.6:

6	Instr	Forehead laceration minimal bleeding
7	Jay	Ok while I have my partners take care of the bleeding and split that
8	Instr	And <u>dis</u>colored abdomen

Gazes at patient's abdomen
_____|_____
| |

9 Jay Discolored abdomen

Jay begins to examine the abdomen
_|_
| |

10 Jean Ow•

Figure 3.2.1

Jay continues to feel for injuries in the abdomen
_____|____
| |

11 Jay Sore region•

12 Instr No

Figure 3.2.2

The instructor describes the patient as having "forehead laceration minimal bleeding" and "discolored abdomen" (line 6 and 8). Jay repeats "discolored abdomen" (line 9) looks at the patient's abdomen. Jay begins to examine the patient by pressing his fingertips into the patient's abdomen in multiple locations. The pressing that Jay performs with his fingertips exemplifies that "exploratory procedures characteristically differ from practical actions by their motions patterns, typically showing features such as repetition and rhythmicity or prolonged tactile contact" (Streeck, 2009, p. 70). Jay is using his fingertips to examine the patient's abdomen through a "repetition" of movement that is not

perfunctory, but actively seeking sensory feedback. Although there is no way to empirically analyze, the tension in Jay's fingertips, visually they appear to intentionally light and conscious of causing the patient pain. In other words, this action is completed with deliberate and delicate precision.

In addition to routine activities such as the head-to-toe examination, the students also use touch to assess the patient's skin and body temperature. For instance, Billie while assessing the drowning victim must assess whether the patient has hypothermia. Although throughout the scenario, Billie has had difficulty delegating further action. To assess if the patient has hypothermia, Billie reassesses the patient's pulse and circulation throughout the scenario. However, the instructor's feedback about the patient's pulse and circulation have not allowed Billie to assess whether or not the patient has hypothermia. The act of touching the patient's wrist, reminds Billie that she should also feel the patient's skin temperature to assess whether or not the patient has hypothermia:

Extract 3.7:

Places hand on patient's wrist and adjusts hand position

01 Billie I'm going to check for cir•cu:la:ti:on

Holds hand on wrist Adjusts hand up patient's forearm/adjusts hand twice and then pauses hold

02 which I already checked for b•ut I'm going to go back and I want his ski::in

Billie taps arm twice

03 Instr Skin pale and cool

Holds hand position
__|___
| |

04 Billie Cool?

Takes hand off arm
__|__
| |

05 Instr Cool

06 real cool

Figure 3.2.3

Figure 3.2.4

Figure 3.2.5

Billie places her hand on the patient's wrist and says, "I'm going to check for circulation" (line 1). She then realizes that she has already checked for circulation prior to this extract and adjusts her hand to move up the patient's forearm and says, "which I already checked for but I'm going to go back and I want his skin" (line 2). Billie holds her hand

position and waits for the instructor's response. The instructor verbalizes the condition and temperature of the patient's skin with "Skin pale and cool" (line 3). Billie taps the patient's hand twice when the instructor says "and cool" which is more groping and then holds the hand position as she confirms the instructor's response with "Cool" (line 4) which sounds more like a question with a rising intonation. The instructor then confirms again with "Cool real cool" (line 5 and 6).

Billie adjusts her hand multiple times to complete the activity of checking the patient's skin. Although sensory exploration in the scenario does not involve sensory feedback from the patient, Billie begins by checking the circulation and then she remembers that she has already done this. The act of touching the patient reminds Billie that she needs to check the patient's skin temperature. In real life, checking the patient's circulation and skin temperature would happen simultaneously, but in the simulation, Billie must remember to ask for the skin temperature in which the instructor also responds that the skin is both "pale and cool".

The paramedic students use "active touch" to perform routine activities that require them to physically examine the patient's body in order to discover maladies. In order to fully assess the patient's condition, the paramedics complete a "full body" examination of the patient's body, which requires them to use their hands to sense issues that might not be visible, but can be discovered through touch. The head-to-toe examination is systematic and requires the paramedic to explore the patient's skin and bone structure through a systematic exploration of touch. Returning to the gunshot scenario, Jean examines the gunshot patient with a head-to-toe examination to determine whether the patient has sustained additional injuries:

Extract 3.8:

1	Jean	So I'm going to do a quick head to toe
2	Instr	Ok
3		(inaudible)
		Jean feels around the patient's head _____|_____ | |
4	Jean	Do I feel anything in his- on- any- crepitus or anything
5	Instr	Uh uh ((nods head no))
		Moves hands down face bones _____|_____ | |
6	Jean	What about his f•ace•
		Touching jaw bone _ |__ | |
7	Instr	N•ope•
		Marks completion/Begins touching neck _|_ _____|_____ | | | |
08	Jean	K (.) his ne•ck

Figure 3.2.3

Figure 3.2.4

Figure 3.2.5

Figure 3.2.6

Figure 3.2.7

Jean begins the head-to-toe examination with, “So I’m going to do a quick head to toe” (line 1). Although Jean’s hands and the patient’s head are out of the camera view, we

can see that she is feeling around the patient's head in line 4 when she says, "Do I feel anything in his- on- any- crepitus or anything". In line 5, the instructor responds that there are no detectable issues on the back of the patient's head. Jean continues the examination by touching the patient's face and says, "what about his face" (line 6). After Jean examines the face and neck, she pauses to ask the instructor if she can see any visible injuries. The instructor confirms that she does not and then Jean continues the examination:

Extract 3.9:

23	Jean	Ok
		Leans the patient forward and places right hand on back
		_____|_____
		| |
24	Jean	sit him up for just a [sec so I can check his back
25	Jon	[I know where's the (inaudible)
		Jean uses her right hand to feel the patient's cervical and thoracic spine moving the hand up and down
		_____|_____
		| |
26	Jean	Ok [I'm checking [his back and [th•e back of his neck and his back
		……
		Jean pauses with hand on patient's spine
		_____|_____
		| |
30	Jean	Do I [feel anything?
31	Jon	[(inaudible)
32	Instr	Uh mm° ((nods head no))
33	Jean	Do I feel anything whe:re-

34		broken ribs or anything in that area
35	Instr	Um mm° ((nods head no))
		…….
		Places hand on abdomen _____|_____ | |
41	Jean	I'm going down to the abdomen
		Presses hand into abdomen and feels around _____|_____ | |
42		do I feel anything on the abd•omen?
43	Instr	Nope.
		Continues to press into abdomen ____|___ | |
44	Jean	It feels ok?
45	Instr	Nope it's all sof:t no problems
		Kneels down and reaches to the lower back ____|_____ | |
46	Jean	Lower back?
47	Instr	No injuries.
48	Jean	No injuries (inaudible)
49	Jay	How long ago was it (.) (inaudible)
		Walks around to front of patient and feels down arms _____|_____ | |
50	Jean	Ok I'm going to go down his arm•s real quick
51		do his arms feel ok

Figure 3.2.8

Figure 3.2.9

Figure 3.2.9

Jean asks the student assistants to “sit him up for just a sec so I can check his back” (line 24). Jean leans the patient forward and holds the patient in place with her left hand while her right hand is on the cervical spine. Jean verbalizes her actions for the instructor with “Ok I’m checking his back and the back of his neck and his back” (line 26). Jean uses

her hand to feel up and down the cervical and thoracic spine. In line 30, Jean continues to feel up and down the patient's spine and asks the instructor if she feels any injuries. The instructor nods her head no and says "uh mm" (line 32). Jean pauses her exploratory touch to ask the instructor if she feels any "broken ribs or anything" (line 34). Again the instructor shakes her head no and says, "Uh mm" (line 35). Jean places her hand on the patient's abdomen and says, "I'm going down to the abdomen". In line 41-44, Jean uses her hand to feel the patient's abdomen by pressing into an area and then moving her hand slightly to feel another area. The instructor informs her that there are no problems (line 43 and 45) with the abdomen and Jean moves onto the lower back. Jean says, "Lower back" (line 46) and kneels down to reach the patient's lower back. Although Jean's hand is not visible, it can be inferred from her movement that she is feeling down the lower spine similar to how she examined the cervical and thoracic spine. In line 47, the instructor informs Jean that there are no injuries to the lower back. Jean walks around to the front of the patient and begins feeling down the patient's arms and says, "Ok I'm going to go down his arms real quick" (50). Jean chooses not to examine the patient's legs, and the students continue treating the patient for the gunshot wound.

As Jean examines the face, she uses her fingertips to feel the bone structure of the face, moving the fingertips down the patient's face feeling the bone structure shown in Figure 2.11-2.14. She is doing what Gibson would describe as *active touch*. Instead of lightly grazing over the body, Jean *feels* the shape and contour and actively investigates its shape to detect any deformities or injuries. In other words, Jean is training her fingertips *to feel* like a paramedic. Similar to Jay's exploration of the patient's airway in Extract 3.5, Jean is also actively looking over the patient's bone structure while she methodically feels the patient. What is also important in this example is Jean's body location in relation to the patient. The "repertoire of habits" Jean is building through completing a head-to-toe

examination include feeling, seeing, as well as body position, in relation to the patient's body. Gibson (1966) described the "haptic system" as "an apparatus by which the individual information about both the environment and his body. He feels an object relative to the body and the body relative to an object. It is the perceptual system by which … men are *literally* in touch with the environment" (p. 97). In order for Jean to become an embodied agent in the field, she must train her body through the active exploration of the head-to-toe examination, but also her whole body as relative to the patient's body. Streeck (2009) adds that:

> The haptic system not only includes our sense of touch, but also our body-internal kinesthetic perception; it integrates manually acquired information of the world with our body's self perception and supplies us with knowledge about our environment only by letting us feel the motions and relative positions of our joints (Streeck, 2009, p. 53-54).

Hence, it is important to not only view each sensory exploration in isolation from the other senses, but to regard the entire body as "an apparatus" that must build kinesthetic knowledge including its positioning in relation to others. The patient, for the paramedic, is the central focal point of action and they must train their bodies to work in relation to the physical space taken up by the patient. In sum, they must learn how to maneuver their own bodies in relation to the patient.

Practice with Tools

The previous sections have focused on the students using their bodies as primary sources for sensory exploration, but what is also important, is practice with paramedic tools. Hearing is also verbally acted out since this is all auditory. But an example of the students

acting out the sense of hearing is in the following continuation of the previous extract. This moment comes directly after Billie has finished examining the patient's skin.

Extract 3.10:

7	Anna	Complaint?
		Billie places stethoscope on right side of patient's chest _____|_____ | |
8	Instr	Hes- he's ea•sy to bag
		Holds stethoscope in position _____|_____ | |
9		cl•ear and full
		Moves stethoscope to left side of patient's chest _____|_____ | |
10	Sam	Billie y•ou want me [to grab] a c-collar for him
11	Instr	[Clear and full]
		Moves stethoscope to lower left side of patient's chest _____|_____ | |
12	Instr	clear and full
		Moves stethoscope to lower right side of patient's chest and takes off stethoscope _____|_____ | |
13		clear and full

Figure 3.3.1

Figure 3.3.2

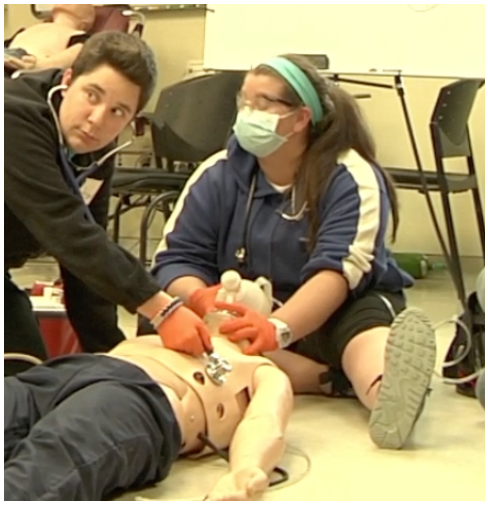


Figure 3.3.3

Figure 3.3.4

In line 7, the student assisting Billie asks the instructor if the patient is compliant and the instructor responds with “Hes- he’s easy to bag” (line 8). This means that the patient

is breathing with help easily. As the instructor is answering Sally's question, Billie places the stethoscope on the patient's chest and waits for the instructor's response. She does not ask for the feedback, but just acts it out. After the instructor confirms that the patient's lungs are clear. They continue a series of checking both the upper chest and the lower chest region.

Although it is difficult to tell from a still image (Figure 3.3.1 – Figure 3.3.4), Anna is squeezing the bag in a rhythmic cadence identical to the rhythm of breathing:

Figure 3.3.5

The paramedic students and instructor refer to this practice as "bagging" the patient, which means assisting the patient with breathing. The activity of "bagging" the patient takes place simultaneously while other activities required to treat the patient are being performed by the student lead and student assistants. It is interesting to note that although, the simulation is in the imagery, the students are required to bag a patient in the exact way it would happen in real life. It is important that they learn the rhythm of helping a patient

breath. Bagging the patient also requires Anna to check whether or not the patient is bagging easy:

Extract 3.11:

7	Anna	Complaint?
8	Instr	Hes- he's ea•sy to bag

This exchange is short, but shows Anna checking to see if the patient is breathing with her assistance. When Anna says, "Compliant", she is asking the instructor whether or not the patient is breathing easily with her assistance. The instructor responds that the patient is "easy to bag", which verbalizes that Anna does not feel any resistance when she squeezes the bag. Anna is required to both act out the rhythmic motion of squeezing the bag while also imagining the pressure inside the bag in relation to her hand and arm. According to Gibson (1966), "the haptic system, unlike the other perceptual systems includes the whole body, most of its parts, and all of its surface. The extremities are exploratory sense organs, but they are also performatory motor organs: the equipment for *feeling* is anatomically the same as the equipment for *doing*" (p. 99). In Anna's case, the action of squeezing the bag requires that if the patient was not "easy to bag" then she would feel the resistant pressure through her fingers, hand, and arm. This sensory feedback would allow her to assess whether or not her assistance was making the patient stable. And although in the case of the simulation, it is impossible for Anna to feel this pressure, she will have trained herself in the rhythmic motion of squeezing the bag and to imagine the pressure.

Summary

Returning to Merleau-Ponty: “the body is the vehicle of being in the world” (p. 82). Sensory exploration in the emergency simulations is two-fold. It aids the students in the creation and maintenance of the perceptual experience. It also allows them to become embodied agents in their profession. Sensory exploration is integral to the paramedic profession because they are training their bodies as “an apparatus” that is continually using exploration to detect injuries and treat the patient. In addition to using the sense of seeing and feeling that I have examined in this chapter, the students will also use hearing and smell (although these senses are verbalized in the simulation). They must also learn to maneuver in the physical space surrounding the patient in order to understand their body in relation to the patient’s and be able to work around it. The performance of sensory exploration allows the students to become agents in their environment. Although the sensory exploration is not needed, it creates concrete lived bodily experiences that allow students to develop physical knowledge of movement. Through sensory exploration, the paramedic students are practicing their embodied agency that will later transfer to them becoming professional agents in the field: Professional agents that can use their bodies to sense and anticipate next steps for treating the patient.

CHAPTER 4: CONCLUSION

The purpose of this study examined emergency training exercises performed by paramedic students. I found that the emergency simulations, which are a specialized form of interaction, present an interesting site for analyzing a collaborative imagining. I found that the students employ a number of communicative strategies both to anchor themselves physically and also blend conceptual events in the scenario. In contrast to a psychological approach, my empirical findings looked at imagination as both verbalized and experienced through the body. I also examined how sensory exploration is integral to the paramedic's training. To become embodied agents in the field, they must both train their senses, but also their bodies in relation to the patient. The simulation exercises are an opportunity where the students use their decision-making skills to stabilize a patient for safe transport; however, they must also learn how to simulate which requires the management of the fictitious frame through a blending of verbalized action with the performance of embodied activities. In addition to practicing professional skill, the students must create a shared perspective on the imagined scenario to treat the patient and build further action. In short, the communicative resources used require the students to use both verbalized and embodied action to stabilize the conceptual simulation.

In Chapter 2, I examined how the fictional frame is embedded in the instructional frame, particularly focusing on how the lead student designs utterances in relation to the fictional component of the scenario. The question of how students arrange the simulation in order to complete the training exercise was examined in Chapter 2. I found that the students alternate routine activities with activities of building an imagined injury. I have argued that the routine activities serve as scaffolding throughout the simulation as recognizable actions grounding the students physically in the simulation. Secondly, I have found that there is

never a point in the laboratory exercises where the simulated action becomes automated; rather, the students must continually work at building action in the scenario. To do this, they blend verbal action with embodied action, and at times, blend both fictitious and instructional frame in the same utterance. In Chapter 3, I examined how sensory exploration, specifically looking and touching, allow students to rehearse future embodied action. Not only are the students learning to treat a patient by tracking vital statistics and making decisions about further treatment, but they learn to use their senses and how to maneuver their bodies in relation to the patient's. In sum, as well as training their intellectual knowledge of treating and stabilizing a patient in the field, they are also training their bodies as the main source of action.

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